AMRL-TR-73-108
Appendix
Addendum 1

COMMUNITY NOISE EXPOSURE RESULTING FROM AIRCRAFT OPERATIONS:
NOISEMAP Computer Program Operator Manual Addendum for Version 3.3 of NOISEMAP

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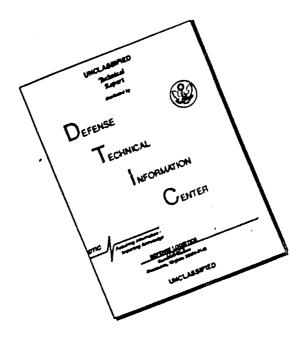
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This report outlines modifications to NOISEMAP 3.2 and a user oriented description of a NOISEMAP data screening program called DATASCREEN. Changes to NOISE-MAP include: new identification options for the FLTTRK, DEPART, and RNPPAD cards; option to print only those pages from PRPLOT, ARPLOT, DMPGRD, or PRINT cards that contain parts of a contour; option to reduce the number of alignment pages; option to suppress the listings of SEL profiles; interface with GPCP is no longer restricted to a grid spacing of 1000 feet or less; addition of the → next page

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Block 20. Abstract cont'd

cont.

CLEAR keyword that will expunge all entries in the library. The new program, DATASCREEN, provides an improved summary, improved error diagnostics, and additional graphic outputs. A deck prepared for DATASCREEN will be accepted by NOISEMAP. The purpose of DATASCREEN is to provide the user with an efficient screening program to use in preparing a data deck for Ldn contours. This report is addendum 1 to the appendix to AMRL-TR-73-108, Community Noise Exposure Resulting from Aircraft Operations: Computer Program Operator's Manual.

PREFACE

This report was prepared by Nicolaas H. Reddingius under contract FO8635-76-C-0188, Job Order IEDE4019, with the Air Force Civil Engineering Center, Tyndall AFB, FL.

This report summarizes work done between 22 March 1976 and 28 December 1976. Major Irl D. Robinson was project officer.

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With the release of version 3.3 a number of new features
are included into NOISEMAP. As always, decks which executed
properly under earlier versions of the program continue to be
valid for the new program.* The new version is designed to be
used with DATASCREEN, a diagnostic program documented in
Appendix A. Both programs accept the same data decks without
modification even though some of the cards may be applicable
to only one program.

The modifications are partly internal to the program and
transparent to the user. Other changes include new keywords
performing additional functions. Certain new identification
options for flight tracks and runup pads also exist in
version 3.3

II. New Identification Options

For documentation purposes it is often desirable to identify
a particular flight track with English text. The COMMENT card
provides one option to accomplish this. In addition, version 3.3
allows one to write a comment directly on the FLTTRK, DEPART
or RNPPAD card. This feature operates in a fundamentally dif-
ferent fashion from COMMENT. Rather than listing the text as a

---

* This holds for all properly documented keywords. Some undocu-
  mented features which were available in version 3.2 have been
  removed.

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comment, the program will store the information internally
and print it as a heading wherever appropriate. Also the
NOLIST feature will not inhibit printing of these headings.

```
         100000                                              LAND36-L
FLTTRK  STRAIGHT-IN APPROACH


00  0000  0000        0000000000000000000000000000000000000000000000000000
11111111111   1111  111111111111111111111111111111111111111111111111111

+++    INGS    FLIGHT TRACK  36-L    STRAIGHT-IN APPROACH
               PROCEED   100000. FT
```

To use this feature all one needs do is to have at least
one non-numeric character in columns 7 - 70. If only valid
numeric characters are found in these columns on the FLTTRK,
DEPART or RNPPAD card, the program assumes that the card is
an "old style" card. The first thirty (30) characters after
the keyword are saved as text identification and the remainder
of the card is ignored.

On FLTTRK cards the text field (Col. 71 - 74) will be
examined. If this field contains the TKOF or LAND identifier
it will be recognized. One may, however, leave these columns
blank and punch them in the first continuation card (which
contains the actual data in usual form). The common practice
of supplying an identifier in column 75 - 78 should be continued.
If the user does not specify a code the program will assign
it one. Program assigned codes are numeric and are preceded
by a dollar sign ($). The same convention as for track type
holds for the track code. It may appear on either card. The
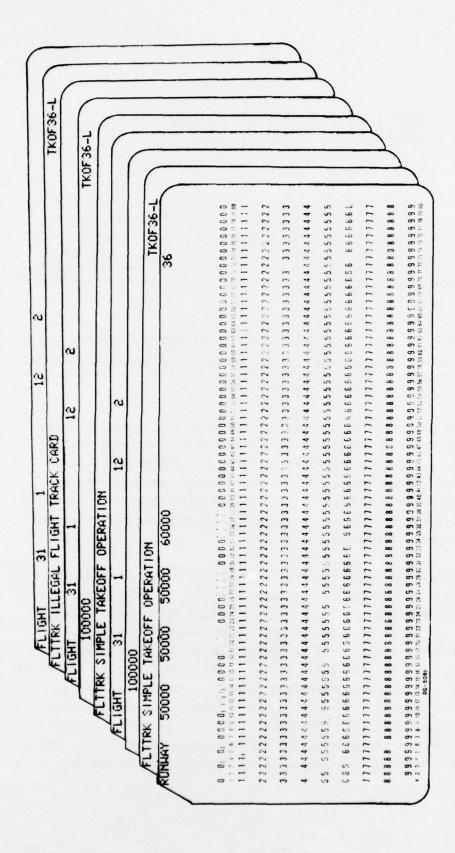use of a continuation character in Col. 79 - 80 of the text card
is optional.

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Figure I.a Use of text field on FLTTRK card

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```
                        ----------------------------
+++                        R U N W A Y   36
                        ----------------------------

    LENGTH 10000.0 FT, GL. SLOPE  3.00 DEG, HEADING    .5 DEG
    START (  50000.0,   50000.0),  END (  50000.0,   60000.0)
    DISPLACEMENTS - TAKEOFF      -0.0, LANDING      -0.0

+++ TAKE-OFFS       FLIGHT TRACK  36-L        SIMPLE TAKEOFF OPERATION
                    PROCEED   100000. FT

                    FLIGHT OPERATIONS   -   TRACK 36-L
                    SIMPLE TAKEOFF OPERATION
                    A/C NO  MISSION        -     0701-2200 2201-0700

+++  F4  MSN2          31          1               12.000     2.000

+++ TAKE-OFFS       FLIGHT TRACK  36-L        SIMPLE TAKEOFF OPERATION
                    PROCEED   100000. FT

                    FLIGHT OPERATIONS   -   TRACK 36-L
                    SIMPLE TAKEOFF OPERATION
                    A/C NO  MISSION        -     0701-2200 2201-0700

+++  F4  MSN2          31          1               12.000     2.000

+++ UNSPECIFIED  FLIGHT TRACK $  9         ILLEGAL FLIGHT TRACK CARD

**************************** E R R O R  ********************
INVALID TRACK SPECIFICATION ≠TKOF≠
*********************************************************************

**************************** W A R N I N G  ********************
FLTTRK CARD CONTAINS ONLY TITLE  ILLEGAL FLIGHT TRACK CARD
*********************************************************************

                    FLIGHT OPERATIONS   -   TRACK
                    A/C NO  MISSION        -     0701-2200 2201-0700

+++  F4                31          1               12.000     2.000
```

Figure I.b Use of text field on FLTTRK card

Examples of the use of these features are shown in Figure I. It is not necessary to make use of this capability for every card. It does, however, make for a considerably more informative chronicle listing. Additionally, DATASCREEN will use the information as text identification in the various operations summaries.

It should be noted that a FLTTRK or DEPART card which does not contain anything except a text field is illegal. This may lead to some confusion since the message printed is the same as if the track type was not specified (LAND or TKOF). The program will print an undefined track message _even though_ a track type is specified on the card. The reason for this paradoxical behavior is that the input routine will create a dummy track and set the undefined flag upon encountering such a card.

The program cannot, of course, distinguish between keypunch errors and text information. Therefore, surprising results may occur when invalid characters appear due to keypunch errors. When this occurs the resulting chronicle listing will readily show the problem.

The program will only treat FLTTR, DEPART and RNPPAD cards in this fashion. Any other card with data format errors will result in a diagnostic message.

III. Blank Page Suppressor for PRINT, PRPLOT

To limit the amount of paper printed by a PRPLOT, ARPLOT, DMPGRD or a PRINT card the program will print only those pages which contain parts of a contour, or grid points for which an exposure was calculated.

IV. Chronicle Alignment Page Suppression

ALIGN

```
000000000000000000000000000.0000000000000000000000000.0000000000000000000000000000000
1 2 3 4 5 6 7 8 910 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 7 80
1111111111111111111111111111111111111111111111111111111111111111111111111111111111
```

+++ SET MAXIMUM NUMBER OF ALIGNMENT PAGES TO 0

Both NOISEMAP and DATASCREEN print two alignment pages
before each airfield and one following each airfield. This
can be changed by using a card with the keyword ALIGN. No
alignment pages are printed when the page count field is left
blank or is zero. When a positive number is specified this
specifies the maximum number of identical pages allowed. So
that when a one (1) is specified the program will omit
one of the two leading pages, when a two (2) is specified
the usual sequence is followed. It is also possible to force
an increase in the number of pages (up to a maximum of five)
by specifying a negative page count.

The typical use of this card will be to suppress the align-
ment pages. As such its logical place is in the initialization
procedure. The very first two alignment pages of the chronicle
cannot be suppressed.

V. Profile Suppression

ECHO

```
0000000000000000000000000000000000000000000000000000000000000000000000000000000000000
1 2 3 4 5 6 7 8 910 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
1111111111111111111111111111111111111111111111111111111111111111111111111111111111
```

+++ EXPANSION OF NOISE LEVEL PROFILES RESTORED

```
+++   FLIGHT NOISE LEVEL PROFILE (SEL    )    NAME=    31031   F-4
COMMENT 031031A0 OMEGA 6.6 06 JAN 76 F-4     1000 FT  300 KTS  59 F  70 PCT
COMMENT 031031A0 TURBOJET        SPEED BRAKE OUT
COMMENT 031031A0 TAKEOFF POWER            100% RPM
               INTEG. ≠A≠-WEIGHTED NOISE LEVEL
      DIST        GRND-TO-GRND  AIR-TO-GRND
    ----------   ------------   -----------
```

With "ECHØ" card the listing would appear as:

```
+++   FLIGHT NOISE LEVEL PROFILE (SEL    )    NAME=    31031   F-4
COMMENT 031031A0 OMEGA 6.6 06 JAN 76 F-4     1000 FT  300 KTS  59 F  70 PCT
COMMENT 031031A0 TURBOJET        SPEED BRAKE OUT
COMMENT 031031A0 TAKEOFF POWER            100% RPM
               INTEG. ≠A≠-WEIGHTED NOISE LEVEL
      DIST        GRND-TO-GRND  AIR-TO-GRND
    ----------   ------------   -----------
       200. FT      122.7         127.7
       250. FT      121.1         126.1
       315. FT      119.3         124.3
       400. FT      117.5         122.5
       500. FT      115.7         120.7
       630. FT      113.9         118.9
       800. FT      112.1         117.1
      1000. FT      110.3         115.3
      1250. FT      108.5         113.5
      1600. FT      106.7         111.7
      2000. FT      104.8         109.9
      2500. FT      102.8         107.9
      3150. FT      100.6         105.8
      4000. FT       98.1         103.6
      5000. FT       95.1         101.2
      6300. FT       91.8          98.6
      8000. FT       88.5          95.7
     10000. FT       84.9          92.5
     12500. FT       80.9          89.0
     16000. FT       76.2          85.2
     20000. FT       70.9          81.1
     25000. FT       64.9          76.7
```

Figure II.   Chronicle Listing of standard profile 031031

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Version 3.3 will not echo back the values on SEL cards. A heading is provided and embedded comment cards[1] are listed to identify the profiles. The actual values can be printed as in earlier versions by inserting a card with keyword ECHO. A NOECHO card will stop the listing of the profiles.
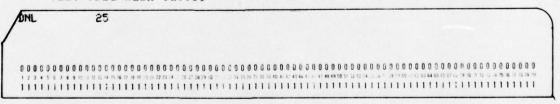
VI. Departure Procedure Expansion

```
EXPAND

0  00000000000000000000000000000000000000000000000000000000000000000000000000000000000
   1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
111  1111111111111111111111111111111111111111111111111111111111111111111111111111111
```

+++   EXPANSION OF DEPARTURE PROCEDURE SUPPRESSED

Version 3.3 does not expand the departure procedures after every FLIGHT card. This capability is useful, however, and can be started using the EXPAND keyword. As always, the NOEXPA card will stop the expansion process. Departure procedures which upon expansion contain errors will always be listed.

VII. Grid Walk Cutoff

```
DNL        25

0000000000000000000000000000000000000000000000000000000000000000000000000000000000000
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
11111111111111111111111111111111111111111111111111111111111111111111111111111111111
```

+++   SET PROGRAM CALCULATION MODE FROM ≠ DNL TO ≠ LDN ≠
      THE FOLLOWING FORMULA IS USED
      FLIGHTS - DNL =SEL + 10 LOG (NDAY + 10.00 NNIGHT) - 49.40
      RUNUPS -   =AL   + 10 LOG (NDAY + 10.00 NNIGHT) - 49.40
      GRIDWALK CUTOFF IS 25.0 DNL   (316 MARGINAL ADDITIONS SUM TO 50.0)

---

[1]   Comment cards are embedded in the profiles on the standard noise library. An example is shown in figure II.

The program contains an internal grid walk cutoff to limit the computation to only those areas where a significant contribution is expected. The 35 DNL value, which is the program default, is suitable for most jet applications. For very low level contours or no jet operations it may be advisable to change this limit.* The desired value can be communicated to the program in the first data field of the LDN (or NEF) card.

VIII. Significant Exposure Cutoff

NOISEMAP considers all exposure levels above 0.0 SEL significant. For all practical purposes this means that all levels are considered significant. This cutoff point can be raised or lowered by placing the proper cutoff value in the second data field. This capability is more important for NEF calculations since the NEF methodology considers only contributions above 75 EPNdB. To defeat this cutoff a lower value can be specified.

IX. GPCP Interface

The GPCP interface has been changed so that the program will no longer segment the data. This requirement was originally necessitated by the limitations of version 1 of GPCP. These limitations no longer exist in version 2. The titles have also been changed so that they appear on every page of a multipage plot.

When NOISEMAP was originally written the grid spacing, and therefore the total grid size was fixed. When changes in grid

---

* Guidelines are given in "Selection of Minimum Day/Night Levels for NOISEMAP Contour Calculations," BBN Technical Memorandum November 1976 prepared for Aerospace Medical Research Laboratory Wright-Patterson AFB.

size were made possible in version 3.2 it became apparent that
GPCP could not handle grids larger than 100000 ft. In version
3.3 this restriction has been removed. There are no limitations
on the size of the NOISEMAP grid. The only limitation is that
GPCP cannot produce plots which are larger than 100 inches. This
problem - not a very serious one in practice - cannot be circum-
vented. When a plot with a dimension larger than 100 inches is
attempted, NOISEMAP will readjust the scale so that the plot
will be no larger than 100 inches.

X.   The CLEAR Keywords

Newly incorporated in the program are keywords which allow
one to delete entire libraries. The expunge cards remain valid,
but the clear command facilitates the process when all infor-
mation is to be discarded. The chronicle listing is as if an
expunge card for all entries in the library had been encountered.
All noise and performance data can be removed with one card
CLEAR, but will leave the NAVAID library intact.

The library maintenance keywords are:

TYPE	ENTER	LIST	EXPUNGE	CLEAR
Descriptor	TODSCR	LTODSC	XTODSC	CTODSC
	LNDSCR	LLNDSC	XLNDSC	CLNDSC
	RUDSCR	LRUDSC	XRUDSC	CRUDSC
Profile	ALTUDE	LALTUD	XALTUD	CALTUD
	DSEL	LDSEL	XDSEL	CDSEL
	SEL	LSEL	XSEL	CSEL
	AL	LAL	XAL	CAL
Navaid	NAVAID	LNAVAI	XNAVAI	CNAVAI

XI. Operations Summary

The operations summary and cross reference listing have
been removed from NOISEMAP. A much improved summary is provided
by DATASCREEN .

APPENDIX

DATASCREEN   Input Screening Program

I.   Introduction

   After several years of intensive use of the NOISEMAP
methodology it appeared that certain additional features could
be implemented to improve the overall efficiency of using the
program in a production environment. Since these additional
capabilities pertain primarily to the data preparation a
separate program, DATASCREEN , was developed. This program
contains most of the NOISEMAP software, but includes a number
of unique routines to satisfy the requirements for additional
diagnostics.

   The DATASCREEN features which are unique are those
dealing with graphics (CHKPLT and GRAPH keywords). In addition
the error messages pertaining to incomplete data may be suppressed.
For all practical purposes, however, the printed output from
DATASCREEN is the same as for NOISEMAP. Data decks which
contain directives for DATASCREEN will execute properly on
NOISEMAP 3.3 without removal of the directives.

   Whereas NOISEMAP depends on the GPCP contouring package to
produce graphics output, DATASCREEN contains the necessary
subroutine calls for CALCOMP plotter as well as Stromberg-
Carlson microfilm plotters. The user has the option of
selecting either or both of these devices. The usual GPCP
output from NOISEMAP is not available from DATASCREEN.

   Instead DATASCREEN handles all graphics requests inter-
nally. Two types of graphic output may be obtained. One is

the check plot which is made when a CHKPLT card is encountered.
The other is a display of altitude and noise exposure which
can be presented in a variety of forms using the GRAPH card.
Both types of plots may be made on a CALCOMP hardcopy unit
or on a microfilm plotter.

II. Input

The input to DATASCREEN is essentially the same as for
NOISEMAP, and version 3.3 of that program will accept without
error message any DATASCREEN directive. Conceptually the
screening program always operates in no-processing mode, even
though PROCES cards are in the deck and will list to check-
out a restart run, which cannot be done using NOISEMAP.

All grid manipulation cards (DMPGRD, ADDGRD, LODGRD, CLRGRD,
PRINT) are inoperative, as they would be in a NOISEMAP check-out
run, although their chronicle echo, except for label information,
will be correct for PROCES or NOPROC mode. The grid array is not
used during the execution of DATASCREEN, to accumulate noise
exposure, but it is used by the routines which generate the
summary report.

The PLOT keyword will list its usual output in the chronicle
but no GPCP data cards are produced. The DATASCREEN program
writes its own graphic output directly. Flighttrack and runup
location maps are produced by the CHKPLT keyword, while altitude
profile and ground exposure are plotted using the GRAPH keyword.
The PICTUR keyword, which allows altitude profiles to be printed
on logical unit 15 is still available.

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a. The CHKPLT Keyword

Since for military installations the runup operations and flight operations are approved by different authorities there is a need to produce these layouts separately. The NOISEMAP checkout plot which combines both onto one plot is also available using CHKPLT. A separate CHKPLT card is required for each plot type.

```
CHKPLT    203   48000  150000  350000   50000  250000
```

```
00000 000000 000000    0000      0000      0000     0000     00000000000000000000000000000
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24  25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 ... 55 56 57 58 59 ... 61 62 63 64 ... 65 66 67 68 69 70 71 72 73 74 75  76  77 78 79  80
111111111111111111111111    11111111111111111111111111111111111111111111111111111111111111111111
```

```
+++    CHECK PLOT OF ENTIRE LAYOUT
       AREA COVERED:  X = 150000. TO 350000.  Y = 50000. TO 250000.
       OUTPUT ON SC4020
       SC4020  PLOT FRAME NO. 1
```

The CHKPLT card contains 6 data fields. The type field contains the plot type and the device on which the output should be placed. The proper value is calculated from the formula TYPE = 100 * DEVICE + OPTION where device and option are specified as follows:

Value	Device	Option
1	CALCOMP	Flight Tracks
2	SC-4020	Runup Pads
3	both devices	both types together

For example the "usual" NOISEMAP output of a complete layout including runup pads on the CALCOMP becomes 103. A microfilm plot of flight tracks is a type code 201.

When no value is specified the program will use the device
type which was specified on the last DEVICE card. If no such
card has been read by the program, then the device will be the
microfilm plotter. In any event a complete layout (option = 3)
will be made.

The next field is the SCALE field. It is only meaningful
for CALCOMP plots and will be ignored for microfilm. The scale
factor is identical to the one used for the PLOT keyword. To
plot on a scale of 1" = 2000', i.e. a scale 1:24000 enter 24000
in this field. The default scale is 1:24000 for flight track
maps and 1:4000 (1" = 400') for runup maps.

The next four fields contain the lower and higher bounds
on the x-coordinate and the bounds on the y-coordinate. The
coordinates should be referred to the same origin that the
NOISEMAP data is referred. The area specified may be larger
or smaller than the NOISEMAP grid. If the area is larger than
the area specified on the AIRFLD and LIMITS cards, the area
seen by NOISEMAP will be shown in a broken line.

When the area to be plotted is not specified, DATASCREEN
will assume that flight track and combined maps cover the
usual NOISEMAP area. If a runup map is desired the program
will plot a square with a side of 20000 ft. centered upon the
airport center. The airport center is taken to be the center
of the rectangle parallel to the x and y axes, which just
circumscribes the runways. This may or may not include all
desired runup locations. It is therefore best to specify the
runup maps explicitly.

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There are no limits on the scale factor used. The screening program will look at the total size of any panel and make sure it is less than 9 ft. for a flight track map and 8 ft. for a runup map. If larger maps are desired a maximum value may be placed in the seventh data field.* When for example, a 15 is punched this signals to the computer that a 15 ft. map is allowed and that this large size was intentional and not due to a keypunch error. Because plotter paper comes in rolls of 120 ft. it is not possible to ask for a plot longer than 120 ft.. It is doubtful that this would be a serious problem. The microfilm plots are always scaled to fit on one single frame irrespective of the area covered, and the seventh field has therefore no meaning here.

b. The GRAPH Keyword

NOISEMAP has the capability of printing an altitude profile plot on logical unit 15. This feature, using the PICTUR card remains available on **DATASCREEN** . In addition, however, the screening program can make a plot on a graphics device of the altitude profile as well as the single event exposure along the flight track. Whereas the line printer display may cover up to 4 pages, the plots will always be on a single 8 1/2 x 11 sheet of paper (actual plot size is 7 x 9 inches). In the case of a microfilm plot each plot will be on a separate frame.

---

* Limiting the plot size to 9 ft. is only a protective device in **DATASCREEN**. It is, however, a very real limitation when using NOISEMAP since the GPCP program cannot produce maps in excess of 100 inches.

```
/GRAPH      4     8000   10000                                          ALTITUDE


00000000000000000000     8000     000000000300000070000500000000000000008000 0  0000
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78
11  11111111111111111111  11011111111111111111111111111111111111111111111  1111111111
```

+++   SET GRAPH OPTION FOR NEXT   4 FLIGHTS TO ALTITUDE

To produce these graphic outputs the keyword GRAPH is
used. The type of plot desired is punched in columns 71-78.
If the word ALTITUDE is present an altitude plot will be made.
If the word EXPOSURE is present, then an exposure plot will
be made. To obtain both types one should not use both cards
in succession, since the second one will cancel the effect
of the first one. The word TOGETHER should be used if both
plots should be on the same page. To obtain the plots on
separate pages use the word SEPARATE. If one desires to obtain
a graphics for several successive FLIGHT cards, one may specify
a repeat count in the first data field of the GRAPH card. This
is exactly analogous to the PICTUR card.

There is an additional graphic output. Rather than pro-
ducing a graph for each individual FLIGHT card, one can combine
all altitude profiles for a given FLTTRK or DEPART card on one
plot. This graph is produced upon encountering a sequence
dependent card other than FLIGHT. To initiate the collecting
of altitude profiles the word COLLECT is placed in columns
71-77. Note that although ALTITUDE, EXPOSURE, TOGETHER and
SEPARATE are mutually exclusive, the COLLECT option is indepen-
dent. To collect altitude profiles for more than one track a
repetition factor can again be specifeid. A separate plot will
be made for each track.

One may desire to plot only a selected set of altitude profiles for a given FLTTRK or DEPART card. To suspend the collection process punch a GRAPH card with the word OFF in columns 71-73. To continue use a card with ON in columns 71-72. Note, however, that ON is not equivalent with COLLECT. A COLLECT card will start a new frame causing any previously collected profiles to be plotted immediately, while ON only continues the collection process. Note, however, that when an OFF card precedes each flight track or departure card, the repetition factor will still "see" those FLTTRK or DEPART cards, even though perhaps ON is never specified.

The program will cover the area from brake release to 80000 ft. at a scale of 1" = 10000 ft.. If a different scale is desired the units per inch should be specified in data field 2. For example if 150000 ft. is the range of interest, then a 20000 could be used to cover the area from brake release to 160000 ft.. Similarly the aircraft altitude is from zero to 6000 ft. at 1" = 1000'. If a higher altitude is needed (or a lower one) the proper number of feet per inch should be entered in data field 3. This field has, of course, no meaning for exposure plots, the dynamic range is always from 130 - 60 dB whatever scale or unit is being used.

When using the CALCOMP plotter these plots will appear in order, interspersed by CHKPLT plots if these are in the deck. On a 30-inch drum plotter 3 plots will be made across the page. The DEVICE card should be used to select the output device, as described below. When microfilm is used as an output medium, then each plot will become the next frame on the film strip. The microfilm grid lines will carry the same annotation as the paper copy, although the nature of the medium is such that no particular scale is associated with the grid.

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c. <u>The DEVICE Keyword</u>

```
DEVICE      25                                                    CALCOMP
-- --

00 00000000000000000000000000000000000000000000000000000000000000000000000000
 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78  79 80
 1111111111111111111111111111111111111111111111111111111111111111111111  11111111
```

+++ SET PLOTTER PAPER WIDTH TO 25.0 INCH

The type of graphic device used during a DATASCREEN run
can be selected with a DEVICE card. The proper device type is
punched into columns 71-78. One may specify, starting in
column 71: CALCOMP, SC4020, FILMPLOT or BOTH. The SC4020 and
FILMPLOT parameters are synonymous. This selection determines
the device for output from GRAPH cards. The DEVICE card is
primarily intended for use with the GRAPH card. When no device
is specifed on a CHKPLT card, however, the information used on
the last DEVICE card, if one was present, will be used.

The capability has the advantage of allowing one to make
altitude and exposure plots on, for example, microfilm while
at the same time making a full size copy of the checkout maps
on the CALCOMP to be sent ot the base for approval. This
particular case would result from:

```
DEVICE                              FILMPLOT
GRAPH       20                      TOGETHER
GRAPH        6                      COLLECT
  .
  .
CHKPLT     301
CHKPLT     302
```

The resulting film strip would then contain a complete file of
all graphics for this job.

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d. The ERRORS Card


```
ERRORS                                                                    OFF
00000 0000000000000000000000000000000000000000000000000000000000000000000000000000
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
11111111111111111111111111111111111111111111111111111111111111111111111111111111
```

Errors due to missing noise or performance data can be
suppressed. The ERRORS keyword is used with,in column 71-73,
the word OFF. To restore the usual NOISEMAP error messages
the ERRORS keyword with,in column 71-73,the word ON is used.
The missing data error code, described in section IV, will
always be listed.

III. Operations Summary

To make the final approval of data input more convenient,
DATASCREEN produces a set of summary tables for flights and
runups. These summaries list all operations by aircraft type
as well as by runway or runup pad. The summaries include
space for making corrections and for certification by the proper
authorities.

The summary by aircraft precedes the summary by runway (or
runup pad). Aircraft in the listing sorted by the aircraft/
mission number under which they were entered irrespective of the
alphanumeric text on the descriptor card. Because this text
information is used in the report according to the following
convention. The first four characters should contain the
aircraft name (e.g. B52G, F111, etc.) the remaining four char-
acters can be used for further identification as appropriate.
These first four characters will then be used as a heading in the
summary by aircraft. When the first four characters are not the

same for all aircraft with the same aircraft number, then all
such aircraft will still be listed, but the heading used will
be the first four characters of the first aircraft of the
listing.

The flight summary will list every flight including the
flight track name in the report. For runups this information
is not presented, but the total runup time at all pads is
computed. The runup times are listed in hours, minutes, and
seconds (hh.mm.ss).

The program will recognize as a touch-and-go any aircraft
which has an altitude profile with a terminating altitude of
less than 300 ft. Such flights are identified by an asterisk
next to their operations and are counted as both a takeoff and
a landing.

Touch-and-go flights must descend to below 300 ft. on
their final approach. They must also return to the start of
the flight track. Warning messages (unique to DATASCREEN)
will be issued if these conditions are not satisfied.

When the track type of TKOF or LAND is omitted from the
FLTTRK card the program cannot tell if it is a landing or a
takeoff. If it is not a touch-and-go the program will then
print a dollar sign next to the operations and list in the
summary a special UNDEFINED category. The undefined operations
are counted in the total for the base.

When FLTTRK cards are used a code such as 24-L should be
used in column 75-78 to make cross reference easy. When no
information is present the program will assign it the value
$XXX where XXX is the card number in the deck. Departure

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procedures do not have this identification feature. Instead
the program will also use the card number, but an asterisk (*)
is used in place of the dollar sign.

IV. Diagnostic Suppression

It is often desirable to produce a flight track or runup
map without supplying all data necessary for NOISEMAP processing,
DATASCREEN will accept such decks and attempt to process them.
When descriptors are missing the program will recognize the
aircraft numbers present in the standard military and civil
data file and print the text accordingly. If a non-standard
aircraft number is found for which no descriptor is present
the program will list this as NOT DEF. All such "not defined"
aircraft are listed together in the summary as "the NOT air-
craft". Note that the profiles produced by the GRAPH card
are not valid if data is missing. In many cases the program
will recognize this condition and suppress the plot.

```
FLIGHT      34      2           8       2
ERRORS                                              OFF

                                                    D

00000 0000000000000000000000000000000000000000000000000000 000000 00C0000000000000
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
11111111111111111111111111111111111111111111111111111111111111111111111111111111
```

```
              FLIGHT OPERATIONS - TRACK 24-L
            A/C NO  MISSION      -  0701-2200  2201-0700
    +++  F-4      31       2           8.000     2.000 A0B0C0D0
```

The usual NOISEMAP error messages for missing data can be
suppressed by use of the ERRORS keyword. Starting in column 71

one may punch OFF in the ERRORS card to suppress the error messages, or ON to continue listing them. Only error messages pertaining to missing noise or performance data are suppressed, all other errors are still listed. Whether or not errors are ON or OFF, DATASCREEN will always list a data code next to the operations card. This code will be listed in the space where NOISEMAP prints execution time.

The letter A in the code means a descriptor missing, the letter B indicates a missing altitude profile, a C is used for missing Δ6 profiles while for each subflight for which no noise level profile exists the program prints a D. The letter is followed by a number which has the following meaning. A zero means that the profile itself was not specified on the descriptor card. A one indicates that a space is available for the profile. A three means that the program has already issued an earlier message with a (1) code. A four means that there is no space available for the profile, even if it were specified. The DATASCREEN error summary will list the total number of times each letter code was printed.